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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/619,626

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Junichi Takeuchi

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EXAMINER

FERNANDEZ RIVAS, OMAR F

ART UNIT

PAPER NUMBER

2129

DATE MAILED: 05/22/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/619,626

Applicant(s)

TAKEUCHI ET AL.

Examiner

Omar F. Fernández Rivas

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 March 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2,4-6,8 and 10-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 2,4-6,8 and 10-13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>A1, A2</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This Office Action is in response to an AMENDMENT made by the Applicant entered on March 22, 2006.
2. The Office Action of November 14, 2005 is incorporated into this Final Office Action by reference.

Status of Claims

3. Claims 1, 3, 7, and 9 have been cancelled. Claims 2, 4-6, 8, and 10-12 have been amended. Claim 13 is new. Claims 2, 4-6, 8, and 10-13 are pending on this application.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 4 and 10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The term "sufficient" in claims 4 and 10 is a relative term which renders the claim indefinite. The term "sufficient" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. The term "sufficient" does not provide reasonable metes and bounds for the claim invention.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 2, 6, 8, 12 and 13 rejected under 35 U.S.C. 102(b) as being anticipated by Li et al. ("GPS Time Series Modeling by Autoregressive Moving Average Method: Application to the Crustal Deformation in Central Japan", The Society of Geomagnetism and Earth, Planetary and Space Sciences, 2000, pages 155-162, referred to as Li).

Claim 2, 8 and 13

Li anticipates an outlier and change point detection device for calculating outlier scores and change point scores for data described with a sequentially input discrete variate and/or continuous variate so as to allow for detection of outliers and change points of said data (Li: page 155, abstract, L1-6; page 156, C2, L8-28; $\epsilon(t, \theta)$ is the outlier score and $w(t)$ is the change point score), said outlier and change point detection device comprising:

a first time-series model learning device for learning a probability distribution of the data as a time-series statistic model specified by a finite number of parameters (Li: page 155, C2, L13-28, page 156, C1, L1-2; Fig. 1; predicting the time series $X(t)$ is obtaining a probability distribution. $L(t)$, $S(t)$ and $y(t)$ are the parameters);

an outlier score calculator for reading the parameters obtained through learning by said first time-series model learning device, and for calculating an outlier score of the data based on the read parameters of the time-series statistic model and the input data and for outputting the outlier score (Li: page 156, C2, L8-16; θ is a vector describing the time series (Li: page 156, C1, L13));

a moving average calculator for sequentially reading each outlier score calculated by said outlier score calculator and for calculating a moving average of the read outlier scores (Li: page 155, C2, L5-10; page 156, C2, L8-16; Fig. 1; using the ARMA method to detect outliers and improve the time series is calculating a moving average of the outlier scores);

a second time-series model learning device for sequentially reading each moving average of the read outlier scores calculated by said moving average calculator, and for learning a particular probability distribution for the read moving averages as a particular time-series statistic model specified by a finite number of particular parameters (Li: page 155, C2, L5-10; page 156, C2, L8-51, page 157, C1, L1-18; Figs. 1 and 2; estimating and improving the parameters of the time series at time t using the ARMA method is learning a probability distribution for the moving averages);

and a change point score calculator for reading the particular parameters obtained through learning by said second time-series model learning device, and for calculating a particular outlier score for each moving average calculated by the moving average calculator based on the read particular parameters of the particular time-series model and the moving average calculated by the moving average calculator, and for

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outputting the particular outlier score for each moving average as a change point score of the data (Li: page 156, C2, L17-51, page 157, C1, L1-18; Figs. 1 and 2; $w(t)$ is a change point score of the data. Abrupt changes in the time series are outliers).

Claim 6 and 12

(Currently Amended) The outlier and change point detection device of claim 2,

Li anticipates said outlier score calculator and said change point score calculator are considered as a single score calculator (Li: page 156, C2, L8-51, page 157, L1-9; and wherein the outlier and change point detection device further comprises: a score judgement device for outputting data pieces of the data that are over a predetermined threshold from the outlier score and the change point score calculated by said score calculator as the candidates of outliers or change points (Li: page 156, C2, L8-11).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 4 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Li as set forth above in view of www.trade10.com (May 14, 2001, pages 1-3, referred to as **Trade10**).

Claims 4 and 10

Li teaches said first time-series model learning device is configured to learn, in a case where the sequentially input data are described with continuous variate only, the probability distribution for generation of said data while sequentially reading real number vector values of the data and by using an autoregressive model (Li: page 155, abstract, L1-3; page 155, L5-10; page 156, L17-45).

Li does not teach a data updating device for updating a sufficient statistic of the autoregressive model by forgetting at least a portion of past data that has been read and using newly read data of said data: and a parameter calculator for reading the sufficient statistic updated by said data updating device and for calculating a specific parameter of the autoregressive model using the sufficient statistic.

Trade10 teaches a data updating device for updating a sufficient statistic of the autoregressive model by forgetting at least a portion of past data that has been read and using newly read data of said data and a parameter calculator for reading the sufficient statistic updated by said data updating device and for calculating a specific parameter of the autoregressive model using the sufficient statistic (**Trade10**: page 1, L1-9; identifying trends in prices is calculating a parameter of the autoregressive model).

It would have been obvious to one of ordinary skill in the arts at the time of the applicant's invention to modify the teachings of Li by incorporating a data updating device for updating a sufficient statistic of the autoregressive model by forgetting at least a portion of past data that has been read and using newly read data of said data and a parameter calculator for reading the sufficient statistic updated by said data

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updating device and for calculating a specific parameter of the autoregressive model using the sufficient statistic as taught by Trade10 for the purpose of calculating parameters that change as the data read changes (**Trade10**: page 1, L5-8).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 5 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Li as set forth above in view of Biliris (US Patent #6,055,491, referred to as **Biliris**).

Claims 5 and 11

(Currently Amended) The outlier and change point detection device of claim 2,

Li teaches wherein said outlier score calculator and said change point score calculator are considered as a single score calculator (Li: page 156, C2, L8-51, page 157, L1-9; calculating abrupt changes is calculating outliers).

Li does not teach a sort device for sorting the data in descending order based on the outlier scores and the change point scores calculated by said score calculator; and

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a display device for displaying a particular number of data pieces of said data with high scores according to the order sorted by said sort device as candidates for being outliers and change points of the data.

Biliris teaches a sort device for sorting the data in descending order based on the outlier scores and the change point scores calculated by said score calculator; and a display device for displaying a particular number of data pieces of said data with high scores according to the order sorted by said sort device as candidates for being outliers and change points of the data (**Biliris**: C6, L45-54).

It would have been obvious to one of ordinary skill in the arts at the time of the applicant's invention to modify the teachings of Li by incorporating a sort device for sorting the data in descending order based on the outlier scores and the change point scores calculated by said score calculator and a display device for displaying a particular number of data pieces of said data with high scores according to the order sorted by said sort device as candidates for being outliers and change points of the data as taught by Biliris for the purpose of allowing the user to see at which points the data presented the biggest changes in continuity.

Response to arguments

Claim rejections under 35 U.S.C. 101

8. In light of the amendments made by the Applicant, the rejection under 35 U.S.C. 101 is withdrawn.

Claim rejections under 35 U.S.C. 102

9. Applicant's arguments have been fully considered, but are moot in view of new grounds of rejection necessitated by new issue(s) raised in Applicant's amendment.

Conclusion

10. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Correspondence Information

11. Any inquires concerning this communication or earlier communications from the examiner should be directed to Omar F. Fernández Rivas, who may be reached Monday through Friday, between 8:00 a.m. and 5:00 p.m. EST. or via telephone at (571) 272-2589 or email omar.fernandez_rivas@uspto.gov.

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If you need to send an Official facsimile transmission, please send it to (571) 273-8300.

If attempts to reach the examiner are unsuccessful the Examiner's Supervisor, David Vincent, may be reached at (571) 272-3080.

Hand-delivered responses should be delivered to the Receptionist @ (Customer Service Window Randolph Building 401 Dulany Street Alexandria, VA 22313), located on the first floor of the south side of the Randolph Building.

Omar F. Fernández Rivas
Patent Examiner
Artificial Intelligence Art Unit 2129
United States Department of Commerce
Patent & Trademark Office

Friday, May 12, 2006

OFR


DAVID VINCENT
SUPERVISORY PATENT EXAMINER